

## REMARKS

Claims 1-32 are pending in the present application. Claims 1-32 have been examined, claims 1-13, 15-18, 21-29 and 32 are rejected, and claims 14, 19, 20, 30 and 31 are objected to. In the above amendments, claims 4, 7, 17 and 28 have been amended, and new claims 33-37 have been added. Therefore, after entry of the above amendments, claims 1-37 will be pending in this application. Applicant believes that the present application is now in condition for allowance, which prompt and favorable action is respectfully requested.

### **Objected to Claims 14, 19, 20, 30 and 31**

Claims 14, 19, 20, 30 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant would like to keep claims 14, 19, 20, 30 and 31 in dependent form in the present amendment.

### **Rejection of Claim 7 Under 35 U.S.C. §112, Second Paragraph**

Claim 7 stands rejected under 35 U.S.C. §112, second paragraph as being indefinite because the phrase “the digital data input is at least one of an analog inphase (I) and a quadrature (Q) baseband signal” is deemed unclear. Claim 7 has been amended to replace “the digital data input” with “the differential current signal”.

### **Rejection of Claims 1-5, 7-13, 15-17 and 22-28 Under 35 U.S.C. §103(a)**

Claims 1-5, 7-13, 15-17 and 22-28 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Lippmann *et al* (U.S. Patent No. 5,371,500) in view of Cook (U.S. Patent No. 4,894,864).

Claim 1 of the present application recites:

“A device comprising:

an interface circuit formed on a first integrated circuit (IC) for generating a differential current signal responsive to a reference signal and to a digital data input;  
and

a circuit element formed external of the first IC for generating an output signal on the basis of the differential current signal.”

Applicant submits that claim 1 is patentable over Lippmann in view of Cook for at least the following reasons.

First, the combination of Lippmann and Cook does not disclose “an interface circuit formed on a first integrated circuit (IC) for generating a differential current signal responsive to a reference signal and to a digital data input,” as recited in claim 1. Lippmann shows a digital to analog converter (D/A) **88** receiving reference signals on lines **28** and **28** and a digital signal on a bus **58** and generating a single-ended analog signal on a line **89**. (See FIGS. 1, 3 and 4.) Lippmann does not teach generating a differential current signal, as stated in the rejection. The rejection states that Cook describes “generating a differential current signal responsive to a reference signal and to a digital data input.” Cook describes an input path **17** providing an output voltage (labeled as I) in response to digital input signals and a transconductance amplifier **21** providing an analog output signal in the form of a current in response to the output voltage I (see FIG. 1, column 2, lines 57-59, and column 2 line 68 to column 3, line 2.) Cook does not describe generating a differential current signal responsive to a reference signal and to a digital data input, as recited in claim 1. Thus, Lippmann and Cook do not describe this feature of claim 1.

Second, the combination of Lippmann and Cook does not disclose “a circuit element formed external of the first IC for generating an output signal on the basis of the differential current signal,” as recited in claim 1. Lippmann shows a display **90** receiving a single-ended signal from D/A **88**. (See FIG. 3.) Cook does not show any circuit coupled to ports **12**. Thus, Lippmann and Cook do not describe this feature of claim 1.

Third, there is no suggestion or motivation to combine Lippmann and Cook. In Lippmann, analog circuit **36** performs functions that are affected by variations in the supply voltage on line **12**. (See column 2, lines 44-47.) The use of reference signals on lines **26** and **28** allows the functions of interface circuit **30** to vary in proportion to the supply voltage, which then allow the system to be insensitive to variations in the supply voltage. (See column 3, lines 4-10.) The circuits in Lippmann are not designed to handle a differential current signal. Furthermore, it is not clear how the differential current signal of Cook can be incorporated in interface circuit **30** and analog circuitry **36** of Lippmann.

For at least the above reasons, Applicant submits that claim 1 is patentable over Lippmann in view of Cook. Claims 2-5, 7-13 and 15-17 are dependent on claim 1 and are patentable over Lippmann in view of Cook for at least the reasons noted for base claim 1.

Independent claim 22 recites the features noted above for claim 1. In particular, claim 22 recites “an analog integrated circuit (IC) ... responsive to an input differential current signal generated externally as a function of a reference signal and a digital data input” and “a circuit element for generating an output signal on the basis of the differential current signal.” These features are not described by Lippmann and Cook for the reasons noted above for claim 1. Claims 23-28 are dependent on claim 22. Claims 22-28 are thus patentable over Lippmann in view of Cook for at least the reasons noted for base claim 1.

Accordingly, the §103(a) rejection of claims 1-5, 7-13, 15-17 and 22-28 should be withdrawn.

**Rejection of Claims 6, 18, 21, 29 and 32 Under 35 U.S.C. §103(a)**

Claim 6 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Lippmann in view of Cook and Rosch *et al* (U.S. Patent No. 5,274,702).

Claims 18, 21, 29 and 32 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Lippmann in view of Cook and Nakamura *et al* (U.S. Patent No. 4,573,153).

Claims 6, 18 and 21 are dependent on claim 1. Claims 29 and 32 are dependent on claim 22. The combination of Lippmann and Cook does not disclose all of the elements of base claims 1 and 22, as discussed above. Hence, the combination of Lippmann and Cook is an insufficient basis for the §103(a) rejection of dependent claims 6, 18, 21, 29 and 32. The other references do not address the deficiencies of Lippmann and Cook.

Accordingly, the §103(a) rejection of claims 6, 18, 21, 29 and 32 should be withdrawn.

**New Claims**

New claims 33-37 recite additional features of the present application. Support for these claims is given in FIGS. 2 and 3 and the corresponding description in the present application.

### CONCLUSION

In light of the amendments contained herein, Applicant submits that the application is in condition for allowance, for which early action is requested.

Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026.

Respectfully submitted,

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